Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB.

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON, Editor-in-chief.

FRANK SHIPLEY COLLINS
MERRITT LYNDON FERNALD
HOLLIS WEBSTER } Associate Editors.

WILLIAM PENN RICH
EDWARD LOTHROP RAND } Publication Committee.

Vol. 4. **July, 1902.** **No. 43.**

CONTENTS:

Protection of our Native Flora. *B. L. Robinson* . . . 139

Notes on North American Grasses. *E. D. Merrill* . . . 142

The Chilian Empetrum in New England. *M. L. Fernald* . . 147

Solanum rostratum and Hieracium ~~aurantiacum~~ praealtum. *L. H. Harvey* 151

Ranunculus abortivus, var. eucyclus in Mass. *F. G. Floyd* . 152

The Staminate Plant of Antenaria Parlinii. *E. L. Rand* . . 152

Further Stations for Veronica Chamaedrys. *B. L. Robinson* . 152

An Osmorhiza new to Eastern America. *M. L. Fernald* . . 153

Range of the typical Lycopodium complanatum. *J. F. Collins* 154

Boston, Mass. 740 Exchange Building. | Providence, R. I. Preston and Rounds Co.

Printed by Edward W. Wheeler, Cambridge, Mass.

RHODORA.—A monthly journal of botany, devoted primarily to the flora of New England. Price $1.00 per year ($1.25 to all foreign countries except Canada); single copies 15 cents. Volume 1, $1.50. All remittances by check or draft, except on Boston or New York, must include ten cents additional for cost of collection. Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be gladly received and published to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than one page of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

Address manuscripts and proofs to

B. L. ROBINSON, 42 Shepard Street, Cambridge, Mass.

Subscriptions, advertisements, and business communications to

W. P. RICH, 150 Commercial Street, Boston, Mass.

Single copies may be had from

E. L. RAND, Corresponding Sec'y N. E. Botanical Club,

740 Exchange Building, Boston, Mass.

STUDENTS OF MUSHROOMS AND OTHER FLESHY FUNGI

Should have Prof. Burt's Key to the Genera of the Basidiomycetes, and Dr. Daniels's Glossary (1000 terms), published by the Boston Mycological Club. Price, 25c. each. Address Box 21, Cambridge, Mass.

FIELD BOOK OF AMERICAN WILD FLOWERS by F. Schuyler Mathews, with descriptions of 850 species and about 300 full page illustrations, many of them in color. A concise description of flower colors and incidental references to insects assisting in the distribution of pollen. Price $1.75. Special discount to subscribers to RHODORA by applying to the author. Address No. 2 Morley Street, Boston.

NURSERYMEN'S DIRECTORY.

HOME GROWN LILIES.

Fresh from Beds. Wild Flowers, Hardy plants of all kinds.
Send for catalogue.

F. H. HORSFORD, Charlotte, Vt.

CONCORD NURSERIES, Concord, Massachusetts. Established on Minot Pratt's Homestead by his son, F. G. PRATT. Over 300 species grown, including *Rhodora*, pink and white, Andromedas, Cornels, Viburnums, Kalmias, Ivy, Myrica, Benzoin, Hamamelis. E. Mass. plants collected. Catalogue.

EVERGREENS of the better class: Picea Pungens, Concolor, and Douglas Spruce, and all other standard varieties. Beautiful nursery-grown Hemlocks, White and Norway Spruces, White, Scotch, Ponderosa, Austrian and Dwarf Mountain Pines, Arbor Vitaes, etc., almost any size desired. With my improved method of packing, evergreens are shipped to all parts of the world with perfect safety. Write for catalogue. D. HILL, Evergreen Specialist, Dundee, Ill.

Entered at Boston, Mass., Post Office as Second Class Mail Matter.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 4 July, 1902 No. 43

THE PROTECTION OF OUR NATIVE FLORA.

B. L. Robinson.

The Society for the Protection of Native Plants has already surpassed the hopes of its founders in the breadth of its influence and the extent of interest and sympathy, which it has aroused. Its work has a national scope and already the Society enrolls members in fifteen states and in Canada. Many thousands of its brief leaflets, well written, moderate in their tone, and convincing in their appeal have been distributed. They have gone to libraries, teachers, members of botanical and horticultural societies, village improvement associations, park-commissioners, flower missions, and especially to school children. It is impossible to doubt that these circulars have brought new ideas to many hundred flower pickers, who thus cautioned will be more than willing to abate any excesses which they may have been thoughtlessly committing in the destruction of our attractive native plants. Newspapers have given their editorial approval to the work of this society and it is most encouraging to see that, stimulated doubtless by this example, other associations have been formed to further the same good cause. Thus there is reason to congratulate the Society for the Protection of Native Plants upon an excellent work well begun. The desire now is that the activity may be unremitted and that it may be continuously directed along wise and practical lines. While pure sentiment and aesthetic instincts may well be appealed to in this work, it is obvious that the movement will be harmed rather than aided by effusions which are merely sentimental and not founded upon carefully ascertained facts.

The greatest need of the Society for the Protection of Native Plants is at present accurate information from many sources regarding

the actual nature and extent of the depredations, which it is its object to prevent. That much needless destruction of our more attractive plants is constantly going on, cannot be doubted. That much of this irreparable loss can be obviated, few will wish to deny. Nevertheless, modes of practical procedure are as yet difficult to determine owing to the vagueness of the information obtainable regarding the particular places and plants requiring attention.

Of plants, which are reported as having been exterminated in certain localities, the majority prove on investigation to be those which were once known in the vicinity of large and growing cities. In regard to most of these cases it is evident to the thoughtful that the destruction of the native vegetation is due only in a minor degree to flower pickers. It is far more the result of perfected drainage, the paving of streets, the extention of squalid suburbs, the tramp of many feet, the demoralizing influences of dust and coal smoke, the dumping of rubbish, and finally the introduction of foreign weeds. It is evident, therefore, that effective portection of the wild flowers in such situations is quite beyond the power and hopes of this Society. Regarding any attractive bits of native vegetation still lingering in the immediate vicinity of our cities, it can only commend them to the legal protection of park-commissioners, urging upon these officials the superior beauty of the wild and natural in comparison with any studied arrangement of exotic shrubs.

But well out from the shadow of the brick and mortar of our great cities the native plants are also being destroyed and in ways so needless that much may certainly be done for their protection. It is far out in the country that the beautiful patches of mountain laurel and holly are being literally hacked to pieces to furnish the quickly passing decorations of winter balls, city weddings and church festivities. It is about our remote summer resorts in the White Mountains, Adirondacks, northern Michigan, and Wisconsin, that the stately paper birches are thoughtlessly stripped of the bark and thus permanently disfigured. It is on Cape Cod that Italian flower gatherers are said to rake together huge bales of trailing arbutus (roots and all), which, brought to the city, yield the innumerable little bunches of flowers purchased on the streets by persons who never suspect the ruthless destruction wrought by this trade. It is on the southern shores of Cape Ann that the botanically interesting station of the *Magnolia glauca* — the only locality for this plant in New England

— has been well nigh destroyed by the transplanting of the trees to the lawns of country residences — a practice the more deplorable since rarely accomplished with success. It may be well to state in this connection that persons desirous of cultivating our native shrubs and vines will succeed much better if they obtain thrifty and well selected stock from some reliable nurseryman than if they attempt to transplant specimens secured in the woods. There are several well-known reasons for this; one is, that the nursery stock has in general been raised in soil and environment nearly approaching that in which the plant is likely to be placed, while on the other hand it is usually difficult to reproduce the exact conditions in which the wild plant has grown. Furthermore, the skilful nurseryman has often selected those forms of our native plants, which experience has shown to develop rapidly and prove hardy. For instance, the writer has observed several Virginia creepers obtained from a nursery and set out along with apparently healthy plants of the same species from the woods. In every instance the nursery stock has in its growth and luxuriance far outstripped the wild plants, the latter remaining relatively low, stunted, sprawling individuals, apparently unable to accommodate themselves to the altered environment. In a similar way wild azaleas and rhododendrons are often dug up and transplanted to gardens and lawns, but rarely with success.

It is evident therefore that the destruction of our native vegetation is of two kinds; in one case it is a deplorable but inevitable result of the increase of population and the extension of our cities, in the other case the injury and depredations are of a nature to be combated vigorously and with a lively hope of success; for they are the result of no grinding and irresistible economic laws nor even of obstinate selfishness but merely of ignorance. The chief aim of the Society is therefore to enlighten. It is in its province for instance to post notices about summer resorts cautioning visitors against the stripping of the birch trees and pointing out the irreparable injury to the tree — a matter seldom realized by the city guest. It is the duty of the Society to inform the public through the newspapers or by its leaflets concerning the extent and seriousness of the destruction, which is yearly wrought to supply street venders with their wild flowers. This like other undesirable trades can be most successfully discouraged by effecting through enlightened sentiment a diminution in the demand rather than by restraints in the matter of supply.

The province of the Society thus being one of instruction its success will depend upon the amount of accurate and pertinent information, which it can accumulate for distribution to the public. It is urged therefore that persons who are in a position to witness needless depredations upon our native plants will kindly communicate the details of such cases to the secretary[1] of the Society. The executive board of the Society is especially desirous of securing accurate data regarding the sources of supply to venders of wild flowers on streets and at railway stations, also the present sources of the mountain laurel, holly, and other Christmas greens, which are brought to our cities in astonishing quantities during the winter season. Information will always be welcomed regarding plants to be especially protected, nature of leaflets which should be issued, places where notices should be posted, and names of persons desiring membership in the Society or willing to sustain or participate in its work.

NOTES ON NORTH AMERICAN GRASSES.

ELMER D. MERRILL.

ORYZOPSIS CANADENSIS (Poir.) Torr. Fl. N. Y. 2 : 433. 1843.

Stipa canadensis Poir. in Lam. Encycl. 7 : 452. 1806; Pursh, Fl. Am. Sept. 1 : 72. 1814.

Stipa juncea Michx. Fl. Bor.-Am. 1 : 54. 1803, non Linn. 1753.

Milium, (sine nomine) Muhl. Gram. 78. 1817.

Milium (?) *muhlenbergianum* Schultes, Mant. 2 : 178. 1824.

Milium pungens Torr. in Spreng. Neue Entd. 2 : 102. 1821; & Fl. U. S. 1 : 78. 1824.

Oryzopsis parviflora. Nutt. Journ. Acad. Nat. Sci. Phila. 3 : 125. 1823.

Oryzopsis juncea B. S. P. Prel. Cat. N. Y. 67. 1888.

Panicum firmum Kunth, Rev. Gram. 1 : 37. 1829–35.

Urachne canadensis Torr. & Gray in Trin. & Rupr. Agrost. 3 : 17. 1842.

Urachne brevicaudata Trin. Mem. Acad. St. Petersb. VI,[2] 3 : 127. 1835.

According to the Rochester rules, *Oryzopsis canadensis* (Poir.) Torr., is the correct name for this species, as it is the earliest available one, Michaux's name, *Stipa juncea*, being invalidated by *Stipa*

[1] Miss M. E. Carter, Boston Society of Natural History, Boston, Mass.

juncea Linn., and *S. juncea*, Lam., and accordingly Dr. Britton erred in taking the name *Oryzopsis juncea*. *Stipa canadensis* Poir. was based on Michaux's *S. juncea*. *Panicum firmum* Kunth, was based on *Milium pungens* Torr., which is certainly *Oryzopsis canadensis*. The descriptions of *Oryzopsis parviflora* Nutt. and *Urachne brevicaudata* Trin. certainly apply to *Oryzopsis juncea*. Muhlenberg's description of his *Milium* No. 3, without name (*Milium muhlenbergianum* Schultes) scarcely applies to *Oryzopsis juncea* but is so referred for the present.

MUHLENBERGIA EXPANSA (Poir.) Trin. Uniflor. 193. 1824.

Stipa expansa Poir. in Lam. Encycl. Suppl. 7: 453. 1806.

Trichochloa expansa DC. Hort. Monsp. 151. 1813.

Agrostis rubicunda Bosc. l. c., as syn.

Agrostis trichopodes Ell. Sk. Bot. S. C. and Ga. 1: 135. *pl. 8, f. 1.*, 1817.

Muhlenbergia trichopodes Chapm. Fl. So. U. S. 553. 1860.

There has been some uncertainty as to the identity of *Stipa expansa* Poir., as it has previously been confused with *Agrostis arachnoidea* Poir., which is a synonym of *Muhlenbergia capillaris* (Lam.) Trin. Poiret's full descriptions leave no doubt as to the identity of both these species and his *Stipa expansa* is certainly the species described by Elliott as *Agrostis trichopodes*. DeCandolle and Trinius also have full descriptions of the species in question. As Poiret's name is the oldest available one, it should be taken up for the species now known as *Muhlenbergia trichopodes* (Ell.) Chapm.

DESCHAMPSIA **arctica** (Spreng.).

Deschampsia brevifolia R. Br. Suppl. App. Parry's Voy. 291. 1821, non *Aira brevifolia* Bieb. Fl. Taur. Cauc. 3: 63. 1819; *Aira arctica* Spreng. Cur. Post. 32. 1827; Trin. Mem. Acad. St. Petersb. VI. Sci. Math. Phys. et Nat. 1: 56. 1831.

Recently Mr. Nash[1] correctly considering *Deschampsia brevifolia* R. Br. an untenable name, changed to *Deschampsia brachyphylla*, and extended the range of the species south in the mountains to Montana and Wyoming, overlooking the fact that there was already an available published name for the species, *Aira arctica* Spreng., which was based on *Deschampsia brevifolia* R. Br., and which must be retained for the species.

A careful study of Robert Brown's original description of this species, its geographical distribution and an examination of all available material is convincing of the fact that Mr. Nash erred in his interpretation of this species, and that his *Deschampsia brachyphylla* (*Deschampsia curtifolia* Scribn.) is not at all the plant described by Robert Brown.

There is in the U. S. National Herbarium a specimen from Grin-

[1] Nash in Ryd. Mem. N. Y. Bot. Gard. 1: 37. 1900.

nell Land, collected by Lieut. A. W. Greely in 1883, which we consider to represent Robert Brown's species as it agrees more closely with his description than any other specimens we have seen. This plant represents a most distinct species, and is quite different from the form from the Rocky Mountains referred to *Deschampsia curtifolia*. Greely's plant is figured and described by Scribner, Bot. Gaz. 11: 25. *pl. 3. fig. A.* 1886. *Deschampsia brevifolia* R. Br., was based on specimens from Melville Island, and Greely's plant from Grinnell Land not only agrees better with Brown's description than do the specimens from the Rocky Mountains but also in geographical distribution. Our interpretation of the species may be erroneous, but this can only be decided by examination of the type of the species in the Herbarium of the British Museum; but whether it is like the plant from Grinnell Land or like the Rocky Mountain specimens, *Deschampsia arctica* should be the accepted name for the species.

Deschampsia curtifolia Scribn. U. S. Dept. Agric. Div. Agros. Cir. 30: 7. 1901. (*Deschampsia brachyphylla* Nash in Rydb. Mem. N. Y. Bot. Gard. 1: 37. 1900, excl. syn., non Philippi, Anal. Univ. Chile, 94: 23. 1896; *Deschampsia caespitosa setifolia* Griseb. in Ledeb. Fl. Ross. 4; 421. 1853, non *Deschampsia setifolia* Koch, Syn. Fl. Germ. 914. 1837; *Aira media* Trin. Mem. Acad. St. Petersb. VI. Sci. Math. Phys. et Nat. 1: 57. 1831. p. p.; *Deschampsia caespitosa arctica* Vasey, Descr. Cat. 53. 1885; *Deschampsia caespitosa alpina* Vasey in Beal Grasses N. A. 2: 368. 1896; *Deschampsia caespitosa brevifolia* Vasey in Beal, l. c. 369, non *Aira brevifolia* Bieb. 1819.)

A densely caespitose form 4 dm. high or less, with numerous narrow basal leaves, very short culm leaves and exserted contracted or spreading panicles 3 to 7 cm. long. Spikelets as in *Deschampsia caespitosa*.

This species extends from Alaska, south to the high mountains of Montana, Wyoming and Colorado, and should perhaps more consistently be considered only as a variety of *Deschampsia caespitosa*, as in ascending the mountains one can find all intergrading forms, the plants gradually becoming smaller as one ascends, the typical form of *Deschampsia curtifolia* being found at the higher altitudes. This plant may be the true *Deschampsia arctica* (Spreng.). (*Deschampsia brevifolia* R. Br.).

Eragrostis campestris Trin. Gram. Suppl. 72. 1836.

Poa nitida Ell. Sk. Bot. S. C. and Ga. 1: 162. 1817, non Lam. 1791.

Eragrostis nitida Chapm. Fl. So. U. S. 564. 1860.

If this form is to be considered a distinct species, it should be known as *Eragrostis campestris* Trin., which was based on *Poa nitida* Ell., a name invalidated by *Poa nitida* Lam.

Poa arachnifera glabrata Vasey Descr. Cat. 81. 1885, nomen; Dewey, Contr. U. S. Nat. Herb. 2: 546. 1894.

This variety is not valid as it was based on a staminate plant. In the pistillate plants the flowering glumes are constantly profusely webbed at the base, and the keel and lateral nerves are densely pilose below, while in the staminate plants the glumes are entirely glabrous and with only a few webby hairs at the base, or sometimes the hairs are entirely wanting.

POA CUSPIDATA Nutt. in Barton, Fl. Phila. 1: 61. 1818, excl. syn.
Poa brevifolia Muhl. Gram. 138. 1817, non Gaud. 1808.
Poa pungens Nutt. Gen. 1: 66. 1818, nec Georgi 1797–1802, nec Bieb. 1808.
Poa brachyphylla Schultes, Mant. 2: 304. 1824.

Nuttall's name *Poa cuspidata* is the proper one for this species as *Poa brevifolia* Muhl. is antedated by *Poa brevifolia* Gaud. In taking up the names *Poa cuspidata* and *Poa pungens* it was Nuttall's intention to establish a new and more appropriate name for *Poa autumnalis* Ell., but he evidently had a misconception of that species for his descriptions apply not to *Poa autumnalis* Ell., but to *Poa brevifolia* Muhl. Schultes' *Poa brachyphylla* was based on Muhlenberg's *Poa brevifolia*. *Poa cuspidata* Roth, and *P. cuspidata* Baxt., were published later than Nuttall's name, which is the earliest tenable name for the species, now described in our manuals as *Poa brevifolia* Muhl.

POA **ampla** sp. nov. A rather stout, erect, glabrous perennial about 15 dm. high, from very stout rootstocks with linear flat leaves and exserted lanceolate purplish panicles about 2.5 dm. long. Culms glabrous throughout; nodes glabrous; sheaths shorter than the internodes, glabrous; ligule firm, truncate, 2 mm. long; leaf-blades plane, acute, somewhat glaucous, glabrous beneath, scabrous above, those of the culm 1.5 to 2.5 dm. long, about 4 mm. wide, those of the innovations marcescent. Panicles interrupted, 2 to 3 cm. in diameter, the common rachis and the branches erect or ascending, scabrous, fasciculate at the nodes, flower-bearing throughout. Spikelets 7 to 8 mm. long, 3-flowered, much exceeding their scabrous pedicels; empty glumes lanceolate, acute, 3-nerved, scabrous on the keels and nerves, the first 3 to 3.5 mm. long, the second about 1 mm. longer; flowering glumes 4.5 to 5 mm. long, lanceolate, acute, rather prominently 5-nerved, minutely punctate-scabrous throughout and more prominently scabrous on the keels and nerves, basal hairs entirely wanting. Palea nearly equaling the glume, scabrous on the keels.

Type specimen collected at Steptoe, Washington by G. R. Vasey, July 3, 1901, No. 3009.

A peculiar species, related to *Poa nevadensis* and *Poa leckenbyi*, but distinguished from the former by the very prominent rootstocks, plane leaves, short ligule, few-flowered spikelets and more prominently nerved flowering glumes, and from the latter by its scabrous, not pubescent flowering glumes.

PANICULARIA **davyi** sp. nov. A rather glaucous erect perennial

5 to 8 dm. high, with scabrous sheaths, rather harsh flat leaves and elongated contracted or open panicles 2 to 3 dm. long. Sheaths overlapping, minutely retrorsely scabrous, ligule membranaceous, acuminate, about 1.5 cm. long. Leaf blades 1.5 to 2 dm. long, about 6 mm. wide, minutely scabrous. Panicles pale, few-flowered, the common rachis glabrous; branches one or two at each node, 5 to 6 cm. long, ascending or spreading. Spikelets about 1 cm. long, 7 to 9 flowered; empty glumes unequal, the first 1 mm. long, the second about 2 mm. long; flowering glumes 3 mm. long, truncate, prominently nerved, scabrous throughout.

Type specimen collected by J. Burtt Davy, No. 6005, July 21, 1899, marsh near Guerneville, Sonoma County, California.

A peculiar species related to *Panicularia fluitans* (L.) Ktze., and *P. borealis* Nash, but differing from both in its retrorsely scabrous sheaths; also from the former in its smaller flowering glumes and from the latter in having the flowering glumes scabrous throughout.

Panicularia **torreyana** (Spreng.).

Poa torreyana Spreng. Neue Entd. 2: 104. 1821; & Syst. 1: 346. 1825.

Poa elongata Torr. in Spreng. l. c.; & Fl. U. S. 1: 112. 1824, non Willd. Enum. 1; 108. 1809.

Glyceria elongata Trin. Gram. Suppl. 58. 1836.

Sprengel's name, *Poa torreyana*, should be taken up for this species, as *Poa elongata* Torr., is invalidated by Willdenow's earlier published species under the same name.

Bromus **brachyphyllus** sp. nov. A nearly glabrous, pale green, caespitose perennial 3 to 7 dm. high, with numerous rather short leaves and very small exserted few-flowered panicles. Culms slender, puberulent just below the panicle, and densely pubescent at and for a short distance below the nodes, otherwise glabrous; sheaths shorter than the internodes, glabrous; ligule rather firm, about 2 mm. long; leaf-blades firm, plane, glabrous, lanceolate, acute, 5 to 15 cm. long, 5 to 7 mm. wide; those of the culm 2 or 3, ascending, the basal ones numerous, the older ones marcescent and persistent. Panicles pale, erect, 3 to 9 cm. long, the branches spreading or ascending, mostly one-flowered. Spikelets 1 to 2 cm. long; empty glumes unequal, the first very acute, 1-nerved, about 6 mm. long, much narrower than the second which is 8 mm. long, 3-nerved, and abruptly acute, both minutely pubescent; flowering glumes lanceolate, 10 to 11 mm. long, 7-nerved, sparingly pubescent throughout with mostly spreading white hairs 0.5 mm. long or less, bearing just below the acute apex a slender straight awn 3 or 4 mm. in length.

Type specimen No. 2677, W. C. Cusick, collected in open dry pine forests, Black Butte, Crook Co., Oregon, July 19, 1901.

A remarkable species, at once distinguished from other species in this genus by its comparatively short leaves and very small panicles.

In some respects it approaches *Bromus laevipes* Shear, but is not closely related to that species.

Elymus **aristatus** sp. nov. A rather stout, somewhat glaucous, glabrous, tufted erect perennial about 9 dm. high, with flat leaves; strict erect purplish spikes, subulate empty glumes and awned flowering glumes. Sheaths shorter than the internodes; ligule firm, membranous, about 2 mm. long; leaf-blades 1 to 2 dm. long, about 8 mm. wide, glabrous beneath, striate and somewhat scabrous above. Spikes rather densely flowered, 10 to 14 cm. long, about 5 mm. in diameter, the common rachis scabrous on the margins. Spikelets two or three at each node, 2- to 8-flowered; empty glumes subulate, 0.5 mm. broad at the base, about 12 mm. long, scabrous; flowering glumes lanceolate, 6 to 8 mm. long excluding the awns, sparingly but rather strongly scabrous, tapering into a stout straight scabrous awn which is from 3 to 5 mm. in length.

Type specimen No. 2712, W. C. Cusick, in large clumps, Silver Creek, Harney Co., Oregon, July 31, 1901.

A species closely related to *Elymus triticoides* Buckl., which it resembles in habit of growth, although not at all stoloniferous, but from which it is distinguished by its much longer empty glumes and long-awned scabrous flowering glumes. In the type of *Elymus triticoides* in the herbarium of the Philadelphia Academy of Natural Sciences the empty glumes are from 6 to 8 mm. long and the flowering glumes nearly or quite glabrous, acute, or bearing an awn about 1 mm. in length.

THE CHILIAN EMPETRUM IN NEW ENGLAND.

M. L. Fernald.

In August, 1894, Mr. Clarence H. Knowlton and the writer found on the ledges not far above timber line on Saddleback Mt. at the head of the Sandy River, Maine, a luxuriant Crowberry with large juicy reddish or plum-colored fruit. The berries were much larger than the black fruits with which the writer had been familiar on the eastern coast of Maine; and this difference was further emphasized later in the day when at the "pinnacle" of Saddleback (alt. 4450 ft.) the ordinary *Empetrum nigrum* with coal-black fruit was found. But the matter was given little more attention at the time, although Mr. Knowlton soon after reported the form with plum-colored fruit from the slopes of a lower Mt. Saddleback (2200 ft.) in Perkins Planta-

tion near Wilton and Carthage; and it was noticed by the writer on tablelands and slopes at 1500 to 3000 ft. on various minor mountains of central and western Maine. In fact, from its general distribution on the lower mountains of Maine the plant had come to be looked upon by him as an ordinary form of *Empetrum nigrum* with redder fruit than generally described.

Recently, however, an examination has shown that this reddish fruited Crowberry differs in another character from the black-fruited *Empetrum nigrum*. In the common species of arctic and subarctic Europe, Asia, and America the branchlets are glabrous or at most minutely pulverulent-roughened. In the common form of central and western Maine the branchlets are tomentose or even lanate and the young leaves more or less covered with a loose web of hairs.

A tendency to red fruit is not unknown in the ordinary northern plant with glabrous twigs; and such a plant was described by Rafinesque as *Empetrum purpureum*.[1] His species, however, described as smooth, is apparently a form of *E. nigrum* and not the plant with tomentose branchlets. This latter plant of central and western Maine is represented in the Gray Herbarium by a single sheet from the Bay of Islands, Newfoundland, an old sterile branch collected by Oakes in the White Mts., and a fruiting branch collected by William Boott in Carter Notch, New Hampshire; and it has been collected by Dr. G. G. Kennedy on the slopes of Mt. Washington. Besides these specimens from Newfoundland and New Hampshire no other material from North America, Europe, or Asia is found to match the pubescent plant of interior Maine; while the shrub of the Maine coast, of the summits of Mts. Washington, Clay, Lafayette, and Mansfield, and of Lake Superior, Labrador, and Arctic America agrees with the European *E. nigrum* in having glabrous or at most pulverulent branchlets.

In the Gray Herbarium, however, there are two sheets from the Andes of Chili which in habit, foliage and pubescence closely match the common form from interior Maine. This Chilian plant was described in De Candolle's Prodromus as *Empetrum nigrum* γ *andinum*[2] and it was said to be glabrate, and to have red fruit; but Hooker[3] in discussing the genus had previously treated the Chilian plant as identical with *E. rubrum*, Willd.[4]

[1] New Flora, iii. 50 (1836).
[2] DC. Prodr. xvi. pt. 1, 26 (1869).
[3] Hook. Fl. Antarct. ii. 345 (1847).
[4] Willd. Spec. iv. pt. 2, 713 (1806).

Empetrum rubrum was described from the straits of Magellan and though treated by Hooker as identical with the Chilian plant it was maintained as varietally distinct by De Candolle. Judged by the material of *E. rubrum* from the original region, Tierra del Fuego, Hermite Island, and the Falkland Islands, De Candolle's course seems the wisest, for the Fuegian and Falkland plant is far more pubescent and has much coarser broader and flatter leaves than the Chilian. The latter plant, however, var. *andinum*, De Candolle, as represented by material from the Chilian Andes collected in 1854 by Lechler and in 1860 by Ochsenius has narrower leaves, and these and the young branchlets, which are eventually glabrate, are at first conspicuously tomentose as in the reddish-fruited plant of northern New England and western Newfoundland. With such close identity of characters and with no points by which the two plants can be distinguished the writer feels no hesitation in indentifying the pubescent-branched and reddish-fruited Crowberry of New England with *Empetrum nigrum*, var. *andinum*, DC., of the Chilian Andes.

Upon first thought it seems very extraordinary that identical plants should be found in such remote regions as New England and Chili, especially when no intermediate stations are known. But many similarly striking cases of isolated localities have been discussed in the past. As long ago as 1859 Charles Darwin, extending Edward Forbes's theory of a southern migration of northern types to include transtropical migrations, called attention[1] to the presence at isolated alpine stations in the South American Cordillera and as far south as Tierra del Fuego of plants found in boreal North America and Europe. The same point was more distinctly emphasized by Sir Joseph Hooker in his splendid analyses of the distribution of arctic plants.[2] There he showed that of the 586 Arctic-scandinavian plants recognized by him 40 are known in tropical America and 70 in temperate South America. This remarkable isolation of northern European species in South America was accounted for by the natural path for migration from the extreme North formed by the continuous chain of the Cordillera of western America. During the intensely cold periods preceding or accompanying the Glacial Epoch the plants of northern origin and broad circumpolar distribution found in this

[1] Origin of Species, 373, etc.

[2] Trans. Linn. Soc. xxiii (1861), 251, etc. and in Jones, Man. Nat. Hist. Geol. and Phys. of Greenl. 197, etc.

essentially uninterrupted mountain chain conditions under which they could thrive even in equatorial regions; and among the higher mountains of Mexico, Central America, and the Andes of western South America they still occur in isolated areas just as they do more abundantly on our own New England mountains and coast. Thus it is possible to account for the presence of *Cystopteris fragilis* and *Phleum alpinum* at an altitude of 12000 feet on Mt. Orizaba in southern Mexico;[1] of *Carex capitata* in meadows of the Sierra Madre in Chihuahua; of *Sagina procumbens* among the mountains of Chili;[2] of *Trisetum subspicatum* in the Andes of Peru and at the Straits of Magellan; of *Montia fontana*, *Draba incana*, *Primula farinosa*, *Lycopodium Selago*, *Carex magellanica*, *Cerastium arvense*, var. *fuegianum* (recently identified with a Rocky Mt. plant — see Hollick & Britton, Bull. Torr. Club, xiv. 50) from the Straits of Magellan, the Falkland Islands or adjacent regions;[3] and the many other boreal and arctic plants recorded by Hooker, Gay, and others from extra-tropical South America.

The discovery of *Empetrum nigrum*, var. *andinum* in New England, like that of *Cerastium arvense*, var. *fuegianum* in the Rocky Mts., simply adds, then, one more to this most interesting list of unexpected identities.

As now understood by the writer the characters and American distribution of the two Crowberries is as follows: —

Empetrum nigrum, L. Spec. 1022 (1753). Young branchlets glabrous or at most pulverulent-roughened: berries usually black, rarely reddish when mature. — Greenland and Arctic America, south to the Gulf of St. Lawrence and along the coast to Penobscot Bay, Maine, on the higher mountains to Maine, Katahdin (*Thurber*, etc.), Saddleback (*C. H. Knowlton & M. L. Fernald*), and Baldpate, Grafton (*J. A. Allen*); New Hampshire, Mt. Washington (*Boott*, etc.), Mt. Clay and Mt. Lafayette (*E. F. Williams*); Vermont, Mt. Mansfield (*Eggleston*, etc.); New York, Whiteface (*Rowlee*, *Wiegand & Hastings*); Lake Superior (*Houghton*); Washington, Mt. Rainier (*E. C. Smith*, etc.); Oregon, seashore bluffs, Bandon (*Howell*).

E. nigrum, var. andinum, DC. Prodr. xvi. pt. 1, 26 (1869). Branchlets and young leaves tomentose or lanate; berries generally reddish or plum-colored. — Newfoundland, Bay of Islands (*Wag-*

[1] See Hemsl. Biol. Cent.-Am. Bot. iv. 296, 297.

[2] Gay, Fl. Chil. i. 283.

[3] See Hook. Antarctic Fl.

horne); MAINE, rocky slopes and summits of Mt. Katahdin (*Thurber*, etc.), Boarstone — alt. 2000 ft. (*M. L. Fernald*), Squaw — alt. 3000 ft. (*M. L. Fernald*, no. 277), Saddleback, Rangeley — alt. 3500 ft. (*C. H. Knowlton & M. L. Fernald*), Saddleback, Perkins — alt. 2200 ft. (*C. H. Knowlton*), White Cap, Rumford (*J. C. Parlin*), and Speckled Mt., Franklin — alt. 2000 ft. (*J. A. Allen*); NEW HAMPSHIRE, "White Mts." (*Oakes*), Carter Notch (*Wm. Boott*), slope of Mt. Washington (*G. G. Kennedy*); CHILI, higher Andes.

GRAY HERBARIUM.

FURTHER NOTES ON SOLANUM ROSTRATUM AND HIERACIUM PRAEALTUM IN MAINE.— The notes by Mr. O. W. Knight on the appearance east of the Kennebec of *Solanum rostratum* (RHODORA, iii. 276) and *Hieracium praealtum* (RHODORA, iv. 61) may be supplemented by the following observations.

In August, 1900, *Solanum rostratum*, the Buffalo Bur, was noticed in a border of phlox on the campus of the University of Maine at Orono. It was probably introduced there in seed purchased in western New England. The eastern distribution of the Buffalo Bur seems to be almost wholly through commerce; and in Maine it was first detected at Buxton where western grain had been screened.

While visiting the famous station for Mountain Laurel, *Kalmia latifolia*, at Carmel, on July 1, 1898, the writer observed the King-Devil Weed, *Hieracium praealtum*, sparingly established in an adjacent meadow. The following note was made: "Sparsely growing in a meadow with the Mouse-ear Hawkweed, *Hieracium pilosella*, and evidently mistaken for that species." This observation was recorded in an article by the writer on the weeds of Maine and the bad character of the weed was commented upon. In one year it had spread more than had the Orange Hawkweed, *H. aurantiacum*, in twenty. The Carmel station is some twenty miles southwest of that recorded by Mr. Knight; and its observation in Carmel in 1898 supports his supposition "that the plant must have been established in this locality for a number of years to have become so abundant."

This Carmel station furnishes a connecting link between the well-known Gardiner locality seventy-five miles southwest (recorded by D. H. Knowlton in 1895), and the Kenduskeag and Corinth stations of Mr. Knight about twenty miles northeast. These stations indicate a most rapid northeastern invasion of one hundred miles in six years, — an invasion to be regarded with dread by the agriculturist, since

the regal-satanic name but mildly indicates the obnoxious character of the plant.— LeRoy H. Harvey, Hull Botanical Laboratory, University of Chicago.

Ranunculus abortivus, var. eucyclus in Hyde Park, Massachusetts.—On June 17, 1900, a few specimens of *Ranunculus abortivus*, var. *eucyclus*, Fernald,[1] were found with the species in a moist shady woodland within the boundaries of the Stony Brook Reservation, Hyde Park, Massachusetts. Specimens are preserved in the herbarium of the New England Botanical Club and in my own herbarium. The Hyde Park locality is apparently the only station reported in Eastern Massachusetts for this plant south of Ipswich. — F. G. Floyd, West Roxbury, Mass.

The staminate plant of Antennaria Parlinii.—While Mr. E. F. Williams and I were making a botanical excursion through the northern part of Wilmington, Middlesex county, Massachusetts, on May 18, 1902, we observed by the roadside and in the adjoining fields unusually fine patches of *Antennaria Parlinii*, Fernald, growing with others of the more common species of this genus. A careful search resulted in the discovery of two small clumps of the rare staminate plants. As this form of the species has been reported before from Maine only (Rhodora, i: 156. 1899), and then in much less abundance, this new station is of much interest. Specimens have been placed in the Gray Herbarium and the Herbarium of the New England Botanical Club. — E. L. Rand, Boston.

Further stations for Veronica Chamaedrys. — Through the kindness of Mr. J. F. Collins, Curator of the Herbarium of Brown University, I have just seen a specimen of *Veronica Chamaedrys*, L. from Rhode Island. It was collected on waste land in Providence by Edith M. Collins and J. H. Collins, May, 1901. This adds a fifth New England state to those recorded for this plant in Rhodora, iv. 107.

Miss M. E. Blatchford of Cambridge has kindly informed me of a station for *Veronica Chamaedrys* at Andover, Massachusetts, where it was found in grass land by Miss Alice Buck. I have also learned that the station between Cambridge and Watertown was first discovered by Miss Mary Smith of the former city. — B. L. Robinson.

[1] Rhodora, I, 52.

AN OSMORHIZA NEW TO EASTERN AMERICA.

M. L. Fernald.

Among some specimens collected by the late Rev. A. C. Waghorne in southern Labrador is an *Osmorhiza* which differs in some striking points from the two species ordinarily recognized in eastern America. The plant, collected in low woods on Capstan Island, Aug. 18, 1893, was distributed as *O. brevistylis*. Its umbels and umbellules, however, are quite naked, not with well developed involucres and involucels such as ordinarily occur in *O. brevistylis* and *O. longistylis*. Furthermore, the small clavate fruit is obtuse and tipped by a very inconspicuous depressed stylopodium and scarcely perceptible styles. The plant is slender and glabrous below, though minutely and sparingly hispid above and on the sharply cleft leaves.

In all its characters this Labrador plant of Mr. Waghorne's matches authentic specimens from the Rocky Mountains of the recently described *Washingtonia obtusa*, Coulter & Rose,[1] a well-marked species launched by its authors with the following apology under an unfortunate name: "The priority of the name *Washingtonia* rests upon the fact that it is mentioned before *Osmorhiza* in a list of three possible names suggested by Rafinesque for the new genus. In the same sentence he expresses a preference for *Osmorhiza*, and later formally establishes the genus under that name, by which it has been known ever since. It is under protest that we displace a name of such long use for what seems to be so trivial a reason, but the name *Washingtonia* will continue to be put forward in accordance with a technical interpretation of the law of priority."

It is certainly to be regretted that these authors felt it incumbent upon them to make a change based upon such a technical interpretation of the law of priority. As has been repeatedly shown this law followed to its technical extremes in all details would lead to such an upheaval of names as has already called out protests from former active exponents of the principle.

The name *Washingtonia*, merely mentioned by Rafinesque[2] and

[1] Contrib. U. S. Nat. Herb. vii. 64 (1900).

[2] "Several names have been proposed for it, *Washingtonia, Osmorhiza Gonatherus*; but these are not yet published; the second is perhaps the best." — Am. Mon. Mag. ii (1818), 176.

then abandoned by him for the preferred *Osmorhiza*, was for years applied to the western Sequoias, and it is now in popular usage and maintained by at least one professed follower of the law of priority for a Californian palm. The name was not used for the umbelliferous genus by any author besides its originator (and not even by him!) within fifty years of its original publication, but in the meantime the name *Osmorhiza* was taken up not only by Rafinesque but by other authors. The retention then of the name *Osmorhiza* for the genus is in accordance with the definition of the Berlin rule, which is now being recognized by conservative botanists as the most rational law by which to gain uniformity in the selection of generic names. The plant of the Rocky Mountains which has now been discovered in southern Labrador should be known then as *Osmorhiza* **obtusa** (*Washingtonia obtusa*, Coulter & Rose), and it should be watched for with some confidence in northern New England and adjacent Canada.

An Extension of Range for the Typical Lycopodium complanatum.— It was pointed out several months ago[1] that the plant which has long passed as *Lycopodium complanatum* in America is really not that species as it is understood by European botanists, and the European and American forms were forthwith described and the ranges of both, in this country, appended. The true *L. complanatum*, L. was cited as occurring as far south as Island Falls, Aroostook Co., Maine. In the writer's herbarium, however, there are five specimens collected on Pleasant Pond Mountain, Carratunk Plantation, Somerset Co., — more than 100 miles southwest of Island Falls. The Carratunk specimens show five good strobiles and as many more old ones. The peduncles range from 2.5 to 4 cm. long and the strobiles from 1.5 to 2 cm.; these are, in all cases, solitary. The undivided terminal branchlets are slightly more than 2 mm. wide but are not so long as in the specimens mentioned by Mr. Fernald (l. c.) who, by the way, recently called the writer's attention to the fact that the Pleasant Pond Mountain specimens represented an extension of range. — J. Franklin Collins, Providence, R. I.

[1] Rhodora, 3 : 280.

Vol. 4, no. 42, containing pages 111 to 138 and plates 36 to 38, was issued 14 June, 1902.

BOTANICAL PUBLICATIONS

SYNOPTICAL FLORA OF NORTH AMERICA, by A. GRAY and others. Vol. I. Fascicles 1 and 2. A critical treatment of forty-five families of polypetalæ (*Ranunculaceæ to Polygalaceæ*) 1895-1897. $5.20.—GRAY HERBARIUM of Harvard University, Cambridge, Mass.

FLORA OF MT. DESERT ISLAND, MAINE, by EDWARD L. RAND and JOHN H. REDFIELD. With a Geological Introduction by WILLIAM MORRIS DAVIS. 1894. And a new map of the Island. 1901. Price $2.00, post free.—Address EDWARD L. RAND, 53 State Street, Boston, Mass.

NEW ENGLAND WILD FLOWERS AND THEIR SEASONS, by WILLIAM WHITMAN BAILEY. Price 75 cents net.—PRESTON & ROUNDS CO., Providence, R. I.

ARE YOU INTERESTED IN NATURE STUDY? If you are you will want a copy of Mosses with a Hand-lens, by DR. A. J. GROUT. It is the only book of its kind in the English language. It makes the mosses as easy to study as the flowering plants. Eight full page plates and ninety figures in the text. Price $1.10 postpaid. Send for sample pages to O. T. LOUIS, 59 Fifth Avenue, N. Y. City.

THE AMERICAN FERN BOOK.

OUR FERNS IN THEIR HAUNTS.

BY WILLARD N. CLUTE.

This book, just issued, contains an account of all the ferns North of the Gulf States and East of the Rocky Mountains, written in untechnical language. Special attention given to the haunts, habits, and folk-lore of ferns. Full glossary, check-list of the species and the only illustrated key to the Genera ever published. There are 57 full-page plates (several colored) and 157 other illustrations. 350 pages of text 8vo., Cloth. Send for descriptive circular. Sent postpaid for $2.25. Address

WILLARD N. CLUTE & CO., Binghamton, N. Y.

RARE VERMONT PLANTS.
MT. WASHINGTON PLANTS.

SOME THIRTY SPECIES OF CRATAEGUS (type material)
ANTENNARIA, SCIRPUS, RUBUS, ETC.

Quality and quantity guaranteed. Price $10.00 per hundred, post or express prepaid.

W. W. EGGLESTON,
23 N. Main Street,
Rutland, Vt.

Journal of The Maine Ornithological Society.

A quarterly journal of Maine Ornithology, "Bird Protection, Bird Study, the spread of the knowledge thus gained, these are our objects." Vol. IV will be larger and better than previous vols. 50 cts. a year, 15 cts. per copy. Sample copy free.

J. MERTON SWAIN,
Editor and Publisher,
Waterville, Maine.

Why Not Spend the Summer in the Maine Woods?

EVERY BOTANIST enjoys bracing air and picturesque country, and, if with these he can combine the pleasure of discovery, his summer is a happy one. No region in the Eastern United States affords the real botanist such opportunity for the pursuit of his studies in the field as the northern two-thirds of Maine. For there he will find twenty thousand (20,000) square miles of forest rarely interrupted save by the innumerable glistening lakes, interlacing rivers and wild waterfalls, and the rough alpine peaks of unexplored mountains. Thoreau's description nearly sixty years ago of a bit of this great forest to the west of Katahdin might well have been written but yesterday:

"There it was, the State of Maine, which we had seen on the map, but not much like that, — immeasurable forest for the sun to shine on, that eastern *stuff* we hear of in Massachusetts. No clearing, no house. It did not look as if a solitary traveller had cut so much as a walking-stick there. Countless lakes, — Moosehead in the southwest, forty miles long by ten wide, like a gleaming silver platter at the end of the table; Chesuncook, eighteen long by three wide, without an island; Millinocket, on the south, with its hundred islands; and a hundred others without a name; and mountains also, whose names, for the most part, are known only to the Indians. The forest looked like a firm grass sward, and the effect of these lakes in its midst has been well compared, by one who has since visited the same spot, to that of a 'mirror broken into a thousand fragments, and wildly scattered over the grass, reflecting the full blaze of the sun.'"

This is the immense forest-park which we invite you to explore. Here you may find a quiet retreat by pleasant waters, in the shelter of giant cliffs; or if a lean-to or bark-hut are not to your liking you can "put up" at one of the log-camps or lodges already built and ready to give you royal welcome to the simple and wholesome life of the Maine woods. If, however, you prefer to cling a little closer to civilization, you will find comfortable quarters and accommodating hosts in the villages scattered here and there along the line of the BANGOR & AROOSTOOK as it makes its way northward across the wilderness. And even at the hotels you will not find yourself very far from the Maine woods, for a walk of a few minutes will bring you to the verge of the "immeasurable forest."

If you are a lover of northern plants you will have rare pleasure in a tramp across country from your temporary home. If you have been familiar with the rocky oak-woods of southern New England, nothing

can be more fascinating than the damp moss-carpeted evergreen forest, such as you will find occupying the low plains and the cool mountain slopes throughout Northern Maine. You can enter vast stretches of such forest on all sides of *Moosehead Lake* and throughout the *Katahdin Iron Works* region, and all along the main line of the railroad and its various northern branches. Here beneath the tall spruces are the rare plants for which at home you have made long and vain pilgrimages: — the tiny Mitre-wort, MITELLA NUDA, with its lace-like petals, the elusive Sweet-Coltsfoot, PETASITES PALMATA, one year blossoming in abundance, and then failing for years to show another of its fragrant heads, and the delicate Tway-blades, LISTERA AURICULATA, CONVALLARIOIDES, and CORDATA, rarely seen except by the botanist ready to creep in the moss. Here, too, you will make many new acquaintances: — the strange Spurred Gentian, HALENIA DEFLEXA, with its interesting bronze and greenish clustered flowers; the little white PYROLA MINOR for which you have hunted in the White Mountains, and nearby its handsome relative, P. ASARIFOLIA with glossy leaves and flesh-colored flowers. Then here are the Club-mosses, LYCOPODIUM COMPLANATUM, SABINAEFOLIUM, and SITCHENSE, species unknown to many save from herbarium-specimens.

In the region of *Fort Kent* and *Van Buren* these spruce woods shelter very many more species which it is worth while to see: — the largest of the Rattlesnake Plantains, GOODYERA MENZIESII, the rare Arctic Fleabane, ERIGERON ACRIS, the remarkable local Wood Betony, PEDICULARIS FURBISHIAE, unknown outside the St. John Valley.

Where the woods grow thin and the ankle-deep carpet of Hypnum changes to a knee-deep carpet of sphagnum, you will find yourself entering one of the Sphagnum-bogs which cover many thousand miles of Maine and New Brunswick. Here, for instance near *Sherman*, *Crystal* or *Island Falls* on the upper Mattawamkeag, or in hundreds of other similar areas to the west and north — in late May and early June the bog is a brilliant display of color: white foam-like masses of the spicy Labrador Tea, LEDUM GROENLANDICUM, rich rosy banks of the Pale Laurel, KALMIA GLAUCA, indefinite white waves of the Alpine Cotton-grass, ERIOPHORUM ALPINUM, brightened here and there with the deep yellows of Cypripediums. Later these bogs will repeat this show of colors in other fine displays: white in TOFIELDIA or in the Swamp Valerian, VALERIANA SYLVATICA, scattered among the Bog Birch, BETULA PUMILA, and the Swamp Honeysuckle, LONICERA OBLONGIFOLIA; rose in the splendid CYPRIPEDIUM SPECTABILE; and orange in the northern Squaw-weed, SENECIO ROBBINSII. But these showy plants are not alone the attractive features of the bogs, for search will reveal humbler and to the botanist more pleasing returns,— rare CARICES, C. TENUIFLORA, GYNOCRATES, and VAGINATA, or the little Sundew, DROSERA LINEARIS.

If instead of to the evergreen forest your path leads over an upland

ridge with its deciduous covering of sugar-maple, beech, and birch, you will again be in a happy hunting ground, for here, in the upland woods between *Houlton*, *Presque Isle*, and *Fort Fairfield*, is the home of DICENTRAS, CLAYTONIAS and DENTARIAS, of VIOLA SELKIRKII, the Seneca Snakeroot, POLYGALA SENEGA, the woodland orchids, HABENARIA HOOKERIANA, and H. BRACTEATA, and other species which brighten the woods of spring and early summer.

The dense woods, however, are not always the best botanizing grounds, and so, even in northern Maine, their charm is enhanced by the presence of a river. If you follow the ledgy and gravelly banks of one of these northern streams,—as the *St. John* between the *Little Black* and the *Aroostook Rivers*, or the Aroostook itself between *Masardis* and the splendid gorge as the river approaches the *St. John*—you will be always alert, for every turn is apt to bring you to some new discovery. It may be a bank pink with the long racemes of OXYTROPIS CAMPESTRIS, var. JOHANNENSIS, or the equally handsome HEDYSARUM BOREALE, the globular heads of Chives, ALLIUM SCHOENOPRASUM, or the dainty evanescent flowers of PRIMULA MISTASSINICA. On some steep cliff by a water-fall you will see the rosettes of the Aromatic fern, ASPIDIUM FRAGRANS, the daisy-like heads of ERIGERON HYSSOPIFOLIUS, the glistening leaves of SHEPHERDIA, or the pink flowers of the rare ANEMONE MULTIFIDA. On the sandy beach you will find great thickets of northern willows, SALIX GLAUCOPHYLLA, etc., and a brilliant display of ASTRAGALUS ALPINUS, TANACETUM HURONENSE, and PRENANTHES RACEMOSA, interspersed with the less showy EQUISETUM VARIEGATUM, TRIGLOCHIN PALUSTRIS, and JUNCUS ALPINUS, var. INSIGNIS. Higher up the bank, on the talus-slope, are the delicate little Gentian, GENTIANA AMARELLA, var. ACUTA, and the handsome White Painted-Cup, CASTILLEJA PALLIDA.

If you follow the rivers you must not become so absorbed in the shore vegetation as to forget the aquatic plants. This is a land of lakes and ponds; and these and the channels by which they are emptied are often carpeted by plants too little known to the average botanist:— MYRIOPHYLLUM FARWELLII and POTAMOGETON OBTUSIFOLIUS in the *Piscataquis* and *Mattawamkeag Rivers* and their crystal-clear tributaries; and MYRIOPHYLLUM ALTERNIFLORUM and JUNCUS SUBTILIS in the *Mattawamkeag*, *Aroostook* and *St. John*.

The mountains of northern Maine, after all, are among the most fascinating regions for botanizing. If you have once lived on *Katahdin* you can never forget the wild grandeur of its Great Basin and the sheer cliffs and splendid Tableland. In exploring this most impressive of eastern mountains, one finds himself walking over broad carpets of the Alpine Bearberry, ARCTOSTAPHYLOS ALPINA, loaded with deep black berries, the depressed RHODODENDRON LAPPONICUM, gorgeous with rosy-purple flowers, the handsome BRYANTHUS TAXIFOLIUS, and the delicate pink-

flowered CASSIOPE and the close-matted Alpine Azalea, LOISELEURIA. Then it is most thrilling to find in their alpine homes the other plants unknown on the lowlands, as COMANDRA LIVIDA, parasitic on the roots of alpine blueberries and crowberries, CAREX SAXATILIS and KATAHDINENSIS about alpine tarns, and EPILOBIUM ANAGALLIDIFOLIUM and SAXIFRAGA STELLARIS, var. COMOSA, hiding under cold wet boulders and cliffs.

But the greatest charm of the Maine woods for botanists is not in the regions which are now explored and whose vegetation is known. The regions of special interest are the hundreds of mountains, lakes and streams upon which no botanist has yet ventured. There you can go with the spirit of true discoverers, for everything you observe will be of some importance to science. These fields for real investigation are on all sides. For instance, there is only a very incomplete record of the vegetation about *Moosehead Lake*, and only two of its mountains, *Kineo* and *Squaw* have been botanically explored. Only three other large lakes in northern Maine have been visited by botanists and those — *Mattawamkeag*, *Squawpan*, and *Portage* — very superficially examined. No botanist knows *Schoodic*, *Seboois*, *Millinocket*, *Pamedumcook*, *Lobster*, *Chesuncook*, *Chamberlain*, *Caucomgomoc*, *Chemquasabamticook*, *Froid*, *Eagle*, and the countless other splendid waters like a "mirror broken into a thousand fragments and wildly scattered over the grass." Nor does he know the slopes, commanding summits and abysses of the *Sourdnahunk Mts.*, *Traveller*, *Moosilauke*, *Baker*, the *Spencers*, and the hundreds of others "whose names are known only to the Indians."

The northwestern section of Maine is essentially virgin territory; and no successful botanical trip has been made on the upper *St. Francis*. Yet within a few miles of this Maine border there are many northern plants which may well be watched for within New England territory. The botanist whose good fortune takes him to the upper *St. Francis* may watch with hope for PLEUROGYNE CARINTHIACA, ERIOPHORUM RUSSEOLUM, ASTRAGALUS ELEGANS, PARNASSIA PALUSTRIS, SAXIFRAGA CAESPITOSA, ANEMONE PARVIFLORA, CORNUS SUECICA, PEDICULARIS PALUSTRIS, and many other arctic plants known closely to approach northern Maine.

EVERY NEW ENGLAND BOTANIST SHOULD VISIT THE AROOSTOOK. THERE IS ROOM FOR ALL. COME AND SEE.

Send ten cents, to cover postage, for our beautifully illustrated Guide Book for 1902, "In Pine Tree Jungles." Mention RHODORA.

For full particulars as to trains, hotel accommodations, camps, guides, etc., etc., write the Passenger Department,

BANGOR & AROOSTOOK RAILROAD,
BANGOR, MAINE.

THE STANDARD BOTANIES.

GRAY'S MANUAL OF BOTANY. Sixth edition. Revised and extended westward to the one-hundredth meridian, by Sereno Watson, Curator of the Gray Herbarium, Harvard University, and John M. Coulter, Professor of Botany in Wabash College, assisted by specialists in certain groups. Cloth, 8vo, 828 pages, and 25 plates. Price, $1.62, postpaid.

GRAY'S FIELD, FOREST, AND GARDEN BOTANY. New edition. Revised and extended by Professor L. H. Bailey, of Cornell University. Cloth, 8vo, 519 pages. Price, $1.44, postpaid.

GRAY'S LESSONS AND MANUAL. Comprising the Lessons in Botany, Revised, and the Revised Manual. Cloth, 8vo, 1,056 pages, and 25 plates. Price, $2.16, postpaid.

GRAY'S SCHOOL AND FIELD BOOK OF BOTANY. Comprising the Revised Lessons in Botany, and the Revised Field, Forest, and Garden Botany. The text-book in most common use in the high schools of the United States. Cloth, 8vo, 745 pages. Price, $1.80, postpaid.

AMERICAN BOOK COMPANY, 93 Summer St., Boston, Mass.

New York. Cincinnati. Chicago.

A NOTABLE ILLUSTRATED CATALOGUE of Hardy American Plants and Carolina Mountain Flowers will be ready in February. Every reader of Rhodora should have this unique publication as it deals entirely with native plants, and is filled with original illustrations. My stock is grown in the high Carolina Mountains (3,800 feet elevation.) It is hardy. Apply at once to HARLAN P. KELSEY, Tremont Building, Boston, Mass.
Proprietor Highlands Nursery, Kawana, North Carolina.

THE PLANT WORLD,

An Illustrated Monthly Journal of Popular Botany,
Established 1897.
Edited by F. H. Knowlton, Charles Louis Pollard and Cornelius L. Shear.

NOW INCLUDES THE ASA GRAY BULLETIN,

Each issue consisting of 20 pages, with a supplement of 8 pages, describing the families of flowering plants in systematic sequence. A copy of the new "Flora of Vermont" free to every new subscriber desiring it. Back volumes of The Asa Gray Bulletin can be furnished in limited quantity. Subscription Price of The Plant World $1.00 per year. Sample copy free on receipt of 1-cent stamp if RHODORA is mentioned.
Address all communications to

The Plant World Co.,
Box 334, Washington, D. C.